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DURUM WHEAT

QUALITY REPORT

Physical, Chemical, Milling, and Macaroni Characteristics

1970 CROP

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
Plant Science Research Division
and
NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION
DEPARTMENT OF CEREAL TECHNOLOGY

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT SCIENCE RESEARCH DIVISION
in cooperation with
STATE AGRICULTURAL EXPERIMENT STATIONS

QUALITY EVALUATION OF DURUM WHEAT VARIETIES

1970 CROP [1]

by

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Contents Page

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[1] This is a progress report of cooperative investigations containing some results that have not been sufficiently confirmed to justify general release; interpretations may be modified with additional experimentation. Confirmed results will be published through established channels. The report is primarily a tool for use of cooperators and their official staffs and to those persons having direct and special interest in the development of agricultural research programs.

This report was compiled in the Plant Science Research Division, Agricultural Research Service, U.S. Department of Agriculture. Special acknowledgment is made to the North Dakota State University for their facilities and services provided in support of these studies. The report is not intended for publication and should not be referred to in literature citations or quoted in publicity or advertising. Use of the data may be granted for certain purposes upon written request to the agency or agencies involved.

Hard Red Spring and Durum Wheat Quality Laboratory
Fargo, North Dakota
PSR-31-71

COOPERATING AGENCIES, STATIONS, AND PERSONNEL

The cooperating agencies, stations, and personnel conducting the varietal plot and nursery experiments concerned with these durum tests in 1970 were as follows:

California Agricultural Experiment Station:

Davis and Tulelake: Y. P. Puri and C. O. Qualset

Idaho Agricultural Experiment Station:

Aberdeen: D. W. Sunderman*

Minnesota Agricultural Experiment Station:

Crookston, Morris, and St. Paul: R. E. Heiner*, F. A. Elsayed, J. R. Lofgren, and D. D. Warnes

Montana Agricultural Experiment Station:

Belgrade, Bozeman, Creston, Havre, Huntley, Moccasin, and Sidney: F. H. McNeal*, M. A. Berg*, D. E. Baldridge, R. T. Harada, G. P. Hartman, L. Stempke, and V. R. Stewart

North Dakota Agricultural Experiment Station:

Carrington, Dickinson, and Williston: L. Joppa*, T. J. Conlon, E. French, H. Olson, J. Quick, N. Riveland, and F. Sobolik

Oregon State University:

Moro and Pendleton: W. H. Foote, C. R. Rohde, and J. T. McDermid

South Dakota Agricultural Experiment Station:

Bison, Brookings, Eureka, Garden City, Highmore, and Watertown: D. G. Wells, Q. Kingsley, G. Bucheneau, J. J. Bonneman, A. Dittman, F. J. Holmes, L. Schearer, and J. Wunder

Washington State University:

Ellensberg, Othello, Pullman, and Royal Slope: C. F. Konzak, M. A. Davis, and E. Donaldson.

* ARS Employees

INTRODUCTION

This, the ninth annual Durum Wheat Quality Report, is for the 1970 crop. Samples of standard varieties and new strains of durum wheat grown in cooperative experiments in the durum wheat region of the United States[2] were milled and evaluated by the Hard Red Spring and Durum Wheat Quality Laboratory in cooperation with the Department of Cereal Chemistry and Technology on the campus of North Dakota State University at Fargo, North Dakota. The evaluation of the field plot and some advanced durum wheats is integrated with the work done by the Department of Cereal Chemistry and Technology of North Dakota State University. Methods and techniques are described in detail in the text of the report.

Where sufficient quantity of sample was available, the semolina was processed into spaghetti to determine the quality characteristics. When the quantity was insufficient or the dry slick color was sufficiently poor, only the dry slick test was employed. In previous years the mixogram or farinogram value was given for the samples tested. However, because the test was time consuming and of little consequence in the outcome of the general evaluation, it was abandoned.

The purpose of this report is to make available to cooperators the quality data on standard varieties and new strains of durum wheat from the 1970 crop.

The relatively new procedures adopted in this report are more fully described under the Milling, Color Score, Dry Slick Color Score, Spaghetti Processing, and Tenderness Score in the Methods Section. A statistical study of the results, comparing the dry slick method and other established evaluation methods was given in the section of Statistical Study of the Dry Slick Color Score in the 1963 Report (CR-59-64). A new method using a Buhler[3] experimental mill and two Miag[3] laboratory purifiers was employed to process the macro samples of durum wheat this year.

2/ Heiner, R. "Results on Spring Wheat Varieties Grown in Cooperative Plot and Nursery Experiments in the Spring Wheat Region in 1970." Plant Science Research Division, ARS, USDA, PSR-16-71.

3/ Mention of a trademark name or proprietary product does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture, and does not imply its approval to the exclusion of other products that may also be suitable.

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SOURCE OF THE SAMPLES

Four hundred and fifty-three samples were received from twenty-eight stations in eight states--California, Idaho, Minnesota, Montana, North Dakota, Oregon, South Dakota, and Washington--for durum wheat quality tests. Approximately 25% of the samples tested were the named commercial varieties of Lakota, Langdon, Leeds, Mindum, Sentry, and Wells. The remaining samples were either new varieties or samples received from a special test for quality evaluation.

Ninety-five Advanced Yield Nursery samples were received: seven from one station in Idaho (Aberdeen - irrigated plot); seventeen from seven stations in Montana (Belgrade, Bozeman, Creston, Havre, Huntley, Moccasin, and Sidney); fourteen from two stations in Oregon (Moro and Pendleton); sixteen from four stations in South Dakota (Bison, Brookings, Eureka, and Highmore); and forty-one from three stations in Washington (Ellensburg, Othello, and Royal Slope).

Fourteen samples were received from Field Plots grown at Dickinson, and Williston, North Dakota.

Twenty-two samples were from the International Yield Nursery at two locations: six from the Davis, California station, and sixteen from the Royal Slope, Washington station.

One hundred and twenty samples were Uniform Regional Nursery samples grown at the Crookston, Morris, and St. Paul, Minnesota stations; Carrington, North Dakota station; and Eureka and Watertown, South Dakota stations. As last year, no samples were received from Montana.

The durum wheats which were included in the Uniform Regional Nursery 1970 Trials are listed on Page 5. The variety or cross, the C.I. number or state selection number, and the station which developed the variety are given.

Sixty-eight Special Nursery samples were received from Tulelake, California; Moro, Oregon; Garden City, South Dakota; and Pullman and Royal Slope, Washington.

One hundred and thirty-four Preliminary Yield Nursery Trials were received from Tulelake, California and Pullman, Washington.

UNIFORM REGIONAL DURUM NURSERY

Entry No.	Cross or Variety	C.I. or Sel. No.	Year Entered	Source
1	MINDUM	5296	1929	Minnesota
2	WELLS	13333	1957	USDA-N. Dak.
3	LEEDS	13768	1963	"
4	HERCULES	DT191	1966	Canada
5	LK*2/PELISSIER	DT317	1968	"
6	5988/5962	D6517	"	USDA-N. Dak.
7	LDS//LDN/BR134	D6586	"	"
8	61130/LDS	D6647**	1969	"
9	6062/6142	D6674	"	"
10	"	D6676	"	"
11	"	D6721	1970	"
12	"	D6722	"	"
13	"	D6723	"	"
14	LDN*2/ST464//LDS	D6714	"	"
15	"	D6715	"	"
16	LDS//LK*2/LDN	D6718	"	"
17	561/LDS	D6733	"	"
18	LDS/RL3601	D6761	"	"
19	SR63/68105	D6771	"	"
20	62220/61130	D6780**	"	"

** Semidwarf types

METHODS

The methods used in the testing of the samples were essentially the same as given in last year's report, with the addition of some new tests and interpretations of the tests, as well as deletions.

Briefly, the following methods and terminologies were applied:

Test Weight Per Bushel - The weight per Winchester bushel of dockage-free wheat.

Thousand Kernel Weight - The 1000 kernel weight was determined by counting the number kernels in a 10 g. sample of cleaned, picked wheat on an Asco Seed Counter3/.

Kernel Size - The percentage of the size of the kernels (large, medium, and small) was determined on a wheat sizer as described by Shuey4/.

The sieves of the sizer were clothed as follows:

Top Sieve - Tyler # 7 with 2.92 mm. opening
Middle Sieve - Tyler # 9 with 2.24 mm. opening
Bottom Sieve - Tyler #12 with 1.65 mm. opening

Milling - The samples were cleaned by passing the wheat over an Emerson Kicker and Dockage Tester3/ and through a modified Forster Scourer Model 6 3/. The clean dry samples were pre-tempered to 12.5% for at least 72 hours prior to any additional tempering before milling.

The field plot and large advanced yield nursery samples were milled on a Buhler3/ experimental mill specially designed for milling durum wheat. The mill is equipped with corrugated rolls throughout and the semolina purified on a Miag3/ laboratory purifier. All of the stock is handled pneumatically. A flow diagram for the mill is shown on Page 11. The clean dry wheat was tempered in three stages: first to 12.5% moisture at least 72 hours prior to the second stage which is to add an additional 2.0% for 18 hours to give a cumulative moisture of 14.5%, then a final temper of 3.0%, 45 minutes prior to milling.

The other samples were milled on a modified Brabender Quadrumat Jr.3/ Mill. The #2 roll with 13 corrugations per inch is replaced with #1 roll with 26 corrugations per inch. The #3 and #4 rolls are

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4/ Shuey, William C. A Wheat Sizing Technique for Predicting Flour Milling Yield. Cereal Science Today 5: 71-72,75 (1960).

replaced with #2 rolls. The pre-tempered wheat is tempered overnight to 15.5% moisture content before milling. The ground meal is sifted for seven seconds on a Roto-matic[3/] sifter equipped with 30 W and 100 W sieves. The overs of the 30 W is bran, the thrus of the 100 W is flour, and the middle cut-over 100 W and thru 30 W is the unpurified semolina. The purified semolina is obtained by introducing unpurified semolina into Purifier #1 of the Buhler[3/] Mill flow (Page 12), but the tailings for Purifier #1 are not recycled. This material is used in testing the quality of semolina.

Protein Content - The protein was calculated by multiplying by the factor of 5.7, the percent nitrogen, as determined by the standard Kjeldahl procedure.

Mineral Content or Ash Content - This was determined by measuring the residue of the minerals left after incinerating the sample for approximately 16 hours at 600°C. The results were reported as percentage of the sample which was incinerated.

Absorption - This was the water, expressed as percent of the semolina, required to bring the dough to the proper consistency.

All values (protein, ash, absorption) are reported on a 14% moisture basis.

MACRO Spaghetti Processing - Spaghetti was processed on a semi-commercial scale pasta extruder (DEMACO)[3/]. The control as well as sprouted durum was processed with the following extruding conditions:

Temperature	49.5°C.
Rate	12 r.p.m.
Absorption	30%
Vacuum	18 in. Hg

These were the optimum conditions for processing spaghetti, which were calculated by the linear programming technique.

To process the pasta, 1000 g. batch[5/] was premixed by slowly adding the water and mixing at slow speed for approximately 30 seconds, and high speed for 10 seconds, then add the remainder of the water at slow speed in a Hobart C-100-T[3/] mixer equipped with a Pastry Knife Agitator. After all of the water has been added, the semolina and water are blended at high speed for 30 seconds; the mixer was stopped to scrape down the sides of the bowl and the blending

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[5/] Weight was determined as follows:

$$\left(\frac{100-m_1}{100-m_2} - 1\right)\left[W - W\,(m_2-m_1)\right] \doteqdot \text{Amount } H_2O \text{ added}$$

where:

m_1 = original moisture

m_2 = desired moisture

W = desired amount of sample

continued for 90 seconds more to complete the premix stage. The premixed pasta was then transferred to the vacuum mixer of the press and extruded through an 84-strand 0.043 inch teflon spaghetti die. A jacketed extension tube (9¼" long x 1-3/4" inside diameter) was attached to the semi-commercial pasta extruder to allow more time for hydration of the semolina and minimize the number of white specks (unhydrated semolina) in the spaghetti. Extrusion temperature was controlled by a circulating water bath.

MICRO Spaghetti Processing - Thirty grams of semolina were mixed with water to form a stiff dough, pressed into spaghetti and dried. The equipment and procedure have been described by Harris and Sibbitt[6] and Fifield[7].

Spaghetti Drying - Spaghetti was dried in an experimental pasta dryer for an 18 hour cycle as described by Gilles, Sibbitt, and Shuey[8]. During the drying period, the humidity of the dryer was decreased linearly from 95% to 60% R.H. and the temperature was held constant at 100°F.

Color Score - The color of the spaghetti or semolina has been generally accepted as the most important single grading factor. A deep amber or golden color is the most preferable. The amount of yellow pigmentation determines the extent or degree of amberness.

Samples which have a color rating below 8 for spaghetti and 80 for slick color are unsatisfactory. It is possible that the average color score for a crop year may be higher or lower than average, therefore, this would be taken into consideration when giving the overall rating of a variety for that given year. A sample may receive a low rating for reasons other than a deficiency of yellow pigmentation such as: D - Dullness; G - Grayness; R - Redness; B - Branny; W - White Cast or Chalkiness; and S - Speckiness, or a combination of these factors. The sample will be rated accordingly with the exception of the intensity, quantity, and depth of the yellow pigmentation.

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[6] Harris, R. H., and Sibbitt, L. D. Experimental Durum Milling and Processing Equipment with Further Quality Studies on North Dakota Durum Wheats. Cereal Chemistry 19: 388-402 (1942).

[7] Fifield, C. C. Experimental Equipment for Manufacture of Alimentary Pastes. Cereal Chemistry 11: 330-334 (1934).

[8] Gilles, K. A., Sibbitt, L. D., and Shuey, W. C. Automatic Laboratory Dryer for Macaroni Products. CerealScience Today 11: 322-324 (1966).

The following grading system has been adopted for scoring the color of spaghetti and semolina:

COLOR SCORE

Spaghetti	Dry Slick	Description
12	105	Much deeper and intense yellow pigmentation than standard.
11	100	Deeper and more intense yellow pigmentation than standard.
10	90	Standard quality, depth and intensity of yellow pigmentation.
9	85	Slightly less depth and intensity, but sufficient quantity of pigmentation.
8	80	Slightly less quantity as well as depth and intensity of pigmentation than the standard, but still sufficient to be rated satisfactory on the basis of color.
7	70	Sufficiently less quantity of yellow pigmentation than the standard to give a pale yellow color and graded unsatisfactory for color score.
6	60	Sufficiently less quantity of yellow pigmentation than the standard to give a very pale yellow color.
5	50	Only a sufficient quantity of yellow pigmentation to indicate an off-white color with a yellow hue.

The numerical rating describes the depth or amount of pigmentation. In cases where a sample is graded down because of off-color, speckiness, etc., the designation is shown by a letter abbreviation following the numerical score. For example: 4 W would indicate the sample was chalky white with little or no yellow pigmentation; 6 D would indicate that the sample had some yellow pigmentation, but was dull.

Dry Slick Color Score - This is determined by slicking the sample with a standard of known color rating and comparing the two.

Spaghetti Color - The spaghetti color scores were determined on a Model D 25 Hunter Color Difference Meter[3] equipped with a D 25 A optical unit. The specimen area (2 in. diameter) was covered with straight spaghetti strands and readings were taken against a black background with 0% reflectance. Color difference values (L%, a%, and b%) were measured for all the spaghetti samples by the method of Walsh, Gilles and Shuey[9]. A uniform chromaticity chart was used for determining spaghetti color scores.

Cooking Characteristics of Spaghetti-

a. Cooking Procedure

A modification of the method of Sheu *et al.*[10] was adapted to determine cooking quality of spaghetti used in this study. Spaghetti (10 g.) which had been broken into lengths of approximately 5 cm., was placed into 300 ml. of boiling distilled water in a 500 ml. beaker. After 20 min. cooking, the samples were washed thoroughly with distilled water in a Buchner funnel and allowed to drain for 2 minutes. The cooking water as well as the washing solution was collected in pre-weighed 250 ml. beakers.

b. Tenderness Score

Two strands of cooked spaghetti were placed on a plexiglass plate and sheared at a 90° angle with a special plexiglass tooth. A continuous recording of distance versus force was made by the instrument during the operation. An automatic integrator was used to calculate the area under the curve (g. cm.) which was the amount of work required to shear the cooked spaghetti. To measure firmness, the average of four integrator scores was used, and the average work to shear was used as a measure of spaghetti firmness. The higher the value, the firmer the spaghetti. A value of approximately 5 appears to be preferential.

Calculations were as follows:

$E = 0.0199 \times A$ (g. cm.)

A = Average integrator reading

E = Area of curve in g. cm.

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[9] Walsh, D. E., Gilles, K. A., and Shuey, W. C. Color Determination of Spaghetti by the Tristimulus Method. Cereal Chemistry 46: 7-14 (1969).

[10] Sheu, Ruey-Yi, Medcalf, D. G., Gilles, K. A., and Sibbitt, L. D. Effect of Biochemical Constituents on Macaroni Quality. I. Differences between Hard Red Spring and Durum Wheats. J. Sci. Fd. Agric. 18: 237-239 (1967).

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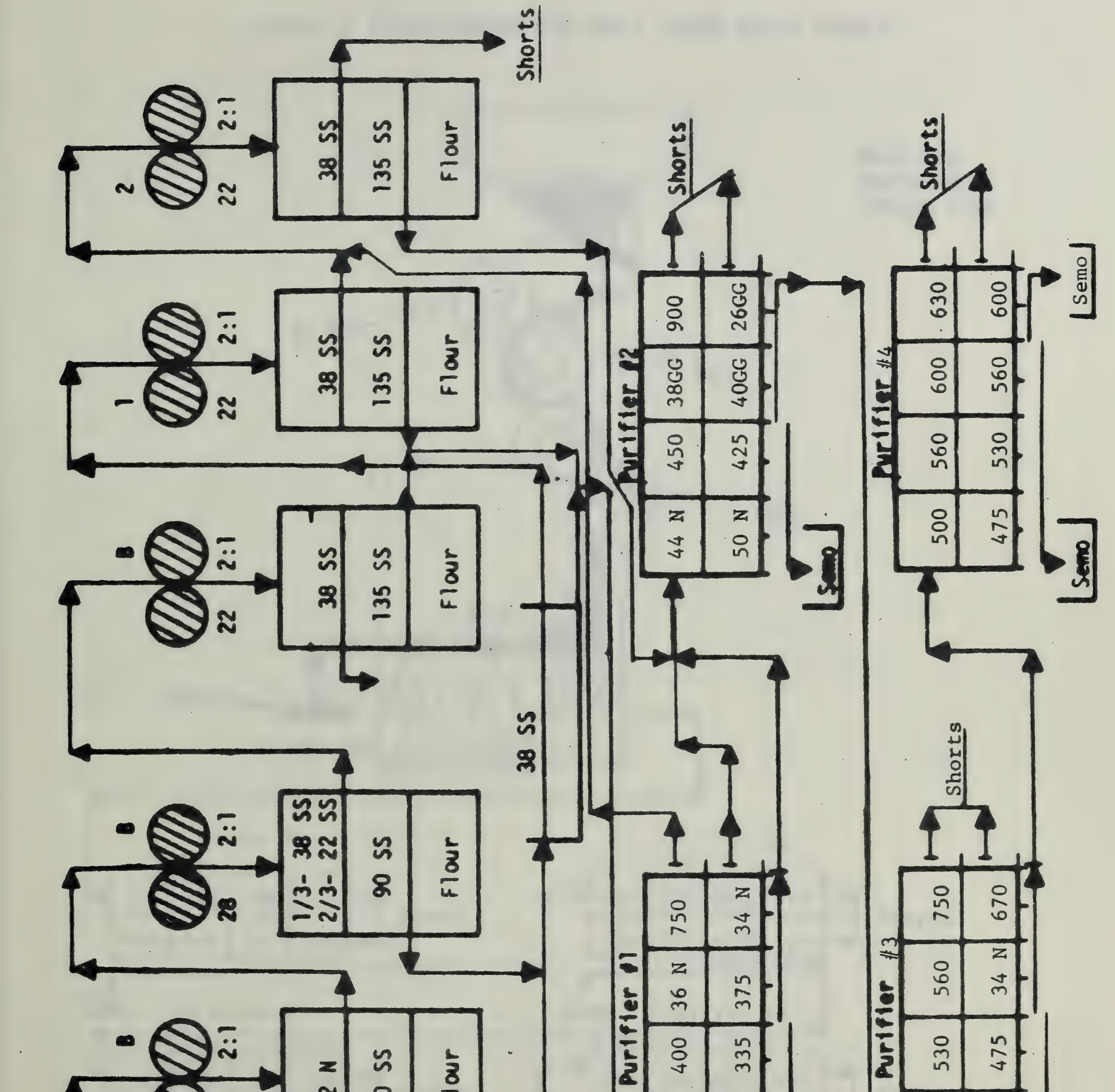
TEMPERED WHEAT
1
B
10
2:1
16 N
90 SS
Flour
2
B
18
2:1
22 N
90 SS
Flour
B
28
2:1
1/3- 38 SS
2/3- 22 SS
90 SS
Flour
B
22
2:1
38 SS
135 SS
Flour
1
22
2:1
38 SS
135 SS
Flour
2
22
2:1
38 SS
135 SS
Flour
Shorts
38 SS
Purifier #1
355
400
36 N
750
70SS
335
375
34 N
Semo
Purifier #2
44 N
450
38GG
900
50 N
425
40GG
26GG
Shorts
Semo
Purifier #3
36 N
530
560
750
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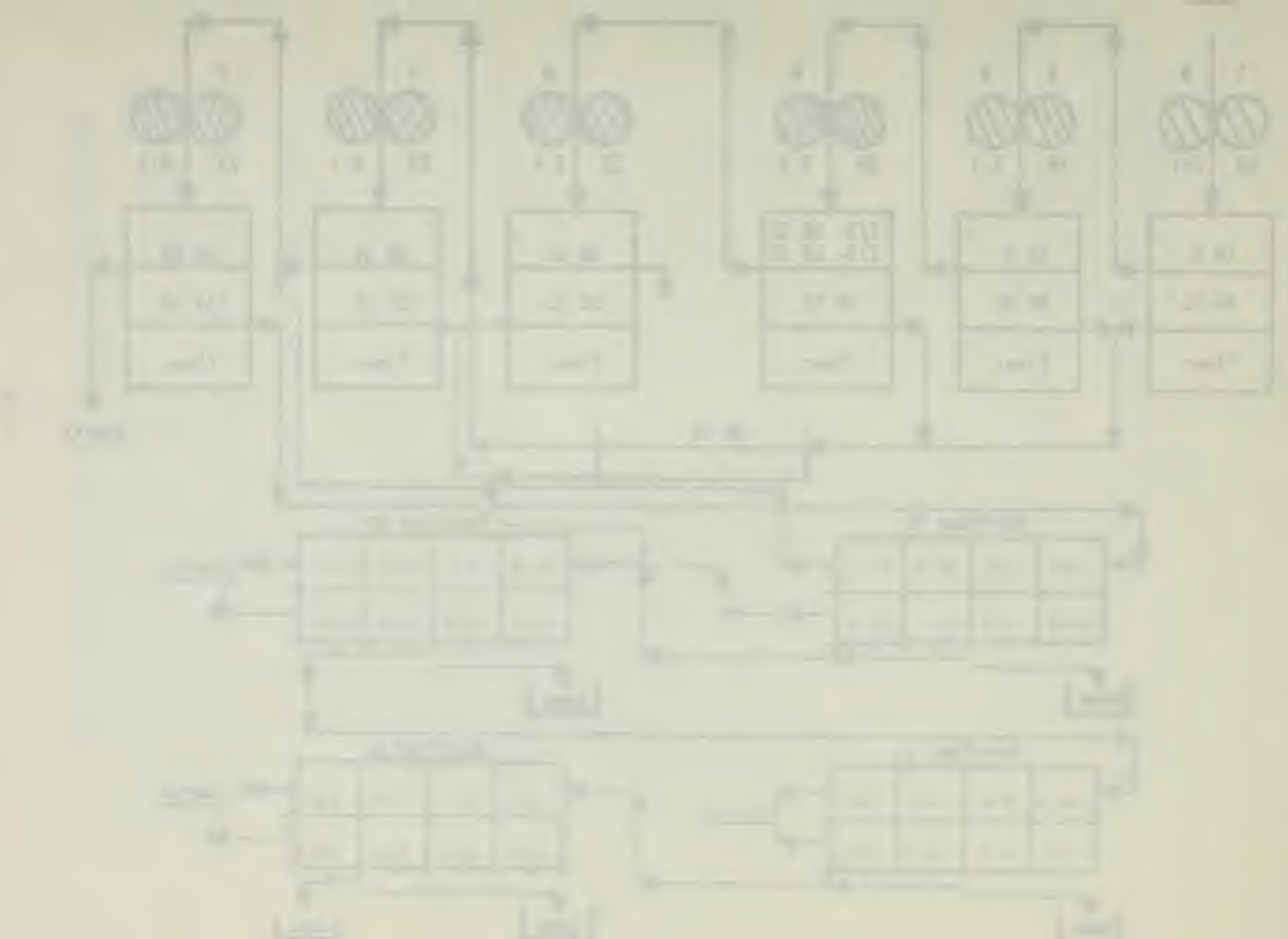
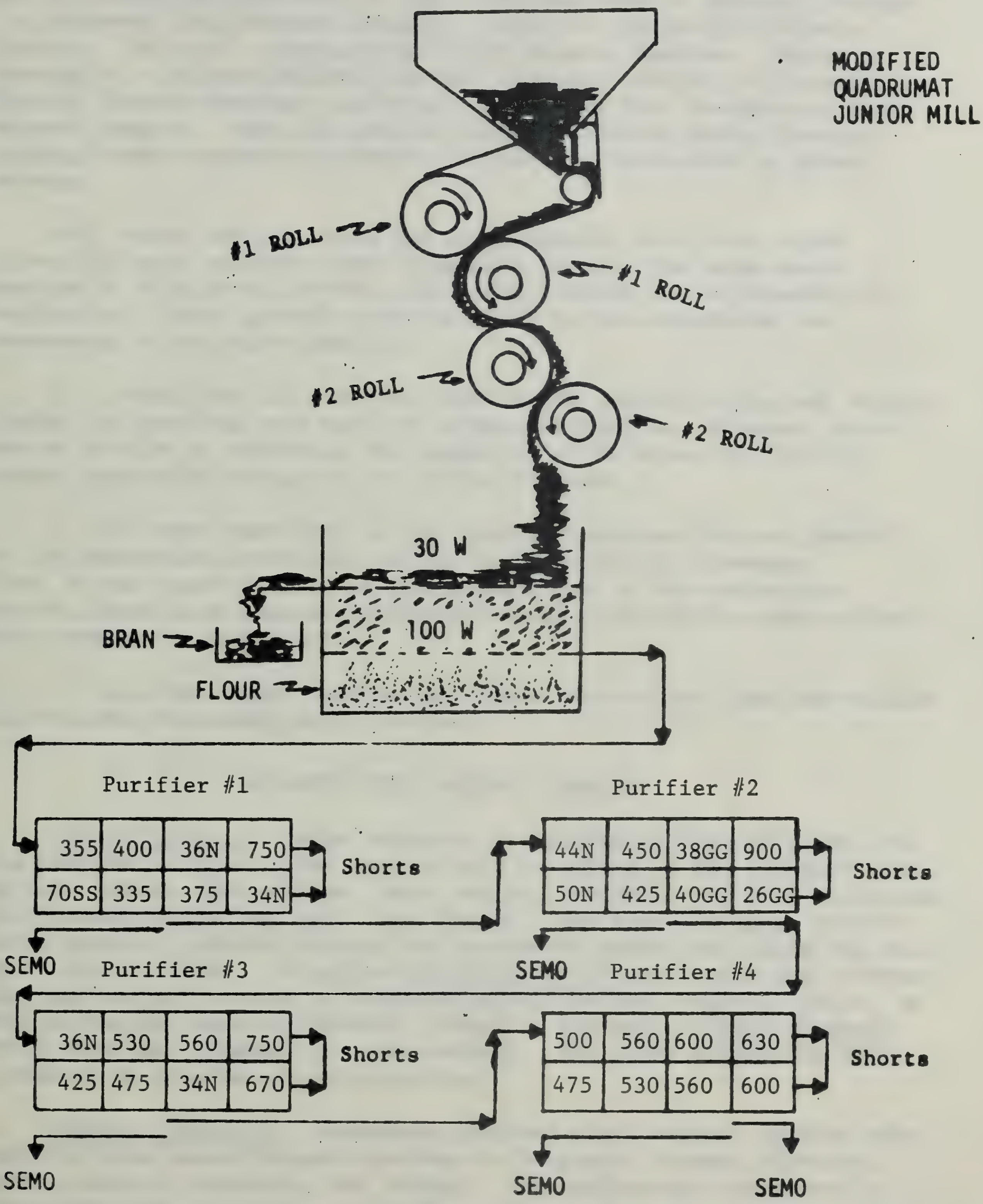


SCHEMATIC FLOW DIAGRAM FOR SMALL DURUM WHEAT SAMPLES



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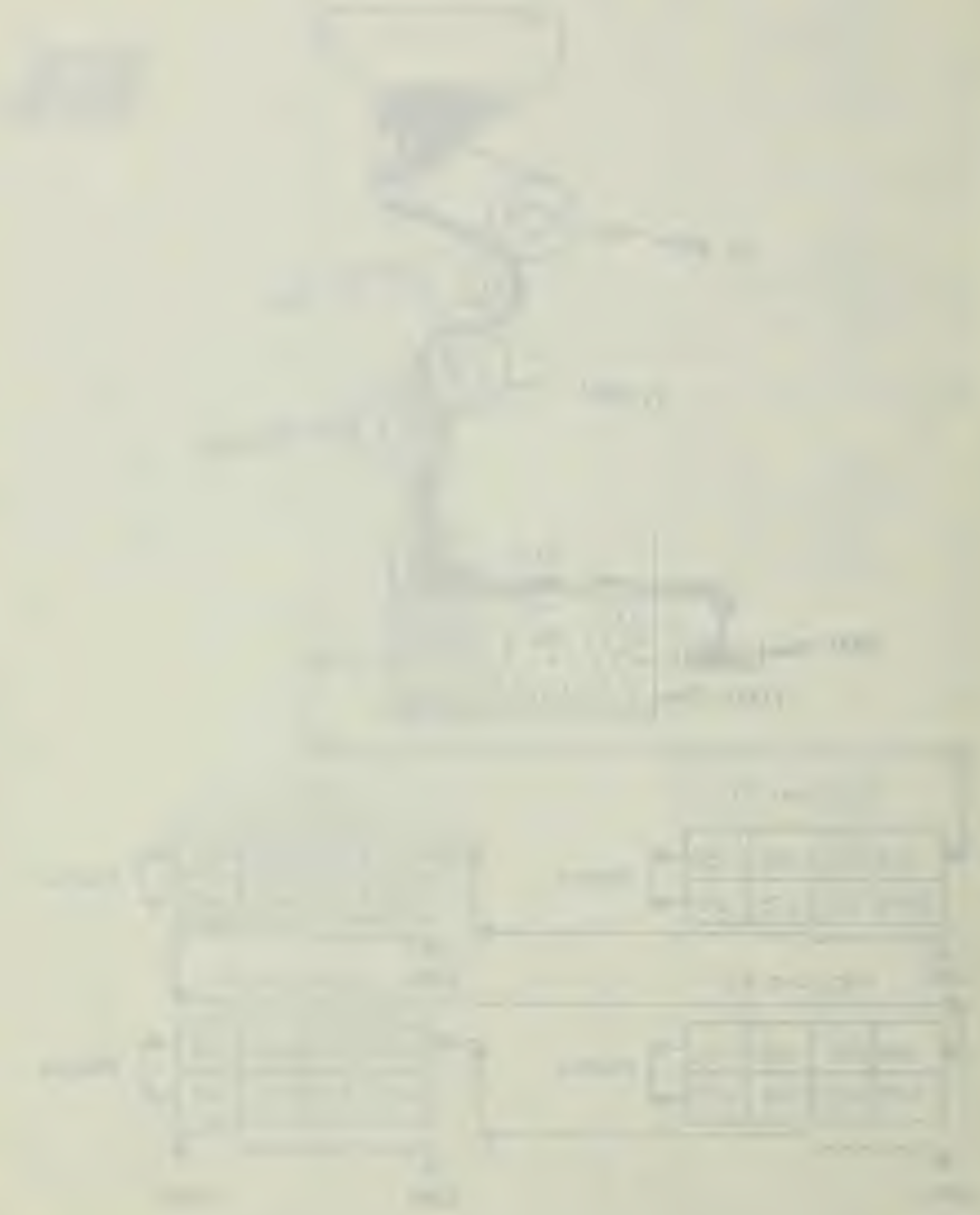

EXPERIMENTAL RESULTS

The results obtained for the 1970 crop of durum wheat samples are tabulated and presented in the following order: Tables 1 through 6 - Advanced Yield Nursery Samples; Table 7 - Field Plot Nursery Samples; Table 8 - International Yield Nursery Samples; Tables 9 through 14 - Uniform Regional Nursery Samples; Tables 15 through 18 - Special Nursery Samples; and Tables 19 through 22 - Preliminary Yield Nursery Samples. Very few samples tested exhibited sprout damage, although some samples did exhibit weathering, blackpoint or green kernels.

Only those samples which had an acceptable dust color score (above 80) were processed into spaghetti, except the large macro samples or only those in which the plant breeder had an interest in evaluating. These general comments could be made regarding the processing of the micro samples.

1. Leeds from all stations appeared wet during mixing and sticky during the kneading even with the proper absorption. However, there was no problem in extruding the spaghetti or in adjusting for the proper absorption using 0.1 ml./25 lb. pressure.

2. At least one-third of the semidwarf samples did not respond to the absorption correction factor of 0.1 ml./25 lb. pressure. Also, it was unpredictable as to the direction of the correction factor, since some samples would over-correct and others under-correct with changes in absorption.

3. All West Coast samples had higher absorptions than the regular milling and processing durum standard.

ADVANCED YIELD NURSERY SAMPLES

Idaho (Table 1). Seven advanced yield samples were received from the Aberdeen station. The samples were comprised of the standard named variety, Leeds; the new West Coast variety, Wandell; and five selections. The Wandell sample had lower test weight, 1000 kernel weight, percent large kernels, protein content and tenderness score than Leeds and would show little promise. Selection D18162-2R-3M-2Y would show some promise as a new variety because of minimum extraction and spaghetti color, as well as maximum semolina mineral content. Selection D18162-2R-4M-2Y would show good promise as a new variety. The other selections show little or no promise as new varieties.

Montana (Table 2). Seventeen advanced yield nursery samples were received from seven Montana stations -- Belgrade, Bozeman, Creston, Havre, Huntley, Moccasin, and Sidney. The samples were comprised of two named varieties, Leeds and Wells. The samples were raised on both fertilized and non-fertilized soil at Belgrade, and irrigated and dryland at the Sidney station. Comparison of the fertilized and non-fertilized samples show a higher protein content, less 1000 kernel

weight, smaller size kernels, less extraction, and higher tenderness score for the fertilized samples. Comparison of the dryland versus irrigated samples at Sidney show the samples raised on dryland had higher protein content, poorer 1000 kernel weight, and kernel size distribution, but better speck count than the irrigated samples.

Oregon (Table 3). Fourteen samples were received from the Moro and Pendleton, Oregon stations. Five of these samples were the named varieties, Lakota, Langdon, Hercules, Wells, and the new variety, Wandell. The selection submitted, OR69166 showed good promise as did Wandell. The varieties Federation and Idaed 59 are not durum wheats.

South Dakota (Table 4). Sixteen samples were received from the advanced yield nurseries from four locations in South Dakota -- Bison, Brookings, Eureka, and Highmore. These samples were comprised of the three named varieties, Hercules, Leeds, Wells, and the selection DT316. The selection showed some promise at three locations, having lower test weight and percent large kernels. In addition, it rated as little promise at Highmore because of an apparent redish tinge in color.

Washington (Tables 5 and 6). Forty-one samples were received from three stations in Washington -- Ellensburg, Othello, and Royal Slope. The data for the Ellensburg and Othello samples are given in Table 5 and for the Royal Slope samples in Table 6.

Leeds, Sentry, and the new variety Wandell were the name varieties received from the Ellensburg and Othello stations. The Wandell samples were rated as showing some promise having higher absorption and poorer color than the standard. Also, for the Othello series Wandell had lower test weight, 1000 kernel weight, and percent of large kernels. Selections NDD06659 and NDD06660 were rated as some promise and little promise, and NDD66102 as some promise and no promise for the two stations, while all of the other selections were rated as no promise, at both stations. Lakota, Langdon, Leeds, Stewart 63, and Wandell were the named varieties from Royal Slope. Wandell was rated as some promise, having lower color, test weight, 1000 kernel weight and percent of large kernels, as well as a high absorption for the percent protein. Selection K6800707 showed good promise as a new variety. Selections NDD06659, K6800703, K6800708, K6800718, and K6800719 show some promise as a new variety, having minimum color. The other selections either show little or no promise.

FIELD PLOT NURSERY SAMPLES

North Dakota (Table 7). Fourteen field plot samples were received from two stations in North Dakota -- Dickinson and Williston. Six of these samples were the named varieties, Hercules, Leeds, and Mindum. Selections D6517 and D6586 were grown at both locations. The selection D6517 shows some promise. The selection D6586 shows some promise at Williston and good promise at Dickinson. Selections D6723 and D6780 were grown only at Dickinson and show good promise and some promise, respectively. The commercial variety 70-70 grown at both locations showed some promise at Williston and good promise at Dickinson.

INTERNATIONAL YIELD NURSERY SAMPLES

California and Washington (Table 8). Twenty-two samples were received from two stations: six samples from Davis, California (some yellowberries) were processed by the Macro Method (Section A); 16 samples received from Royal Slope, Washington were processed by the Micro Method (Section B). The varieties Casteldelmonte I, Wandell, and Wells and the selection 61-130 x Leeds showed some promise; all the other samples showed little or no promise.

UNIFORM REGIONAL NURSERY SAMPLES

Minnesota (Tables 9, 10, & 11). Fifty-nine samples were received from three stations in Minnesota -- Crookston, Morris, and St. Paul. Eleven of the samples were the named varieties, Hercules, Leeds, Mindum, and Wells. The Morris samples had some green kernels and yellowberries.

North Dakota (Table 12). Twenty-one samples were received from the one station in North Dakota -- Carrington. Four of these samples were the named varieties, Hercules, Leeds, Mindum, and Wells and an extra commercial sample, 70-70.

South Dakota (Tables 13 & 14). Forty samples were received from two stations in South Dakota -- Eureka and Watertown. Eight of these samples were the named varieties, Hercules, Leeds, Mindum, and Wells.

The overall general evaluation for the varieties from the three states is indicated below:

DT316 - Shows good promise, based on three crop years' results but does have minimum test weight.

6517 - Shows little promise, based on three crop years' results this selection would show no promise, giving erratic results.

D6586 - Shows some promise, however, based on three crop years' results this selection would show little promise as a new variety due to erratic results over the area.

D6647 - Shows some promise, based on two crop years this selection would show little promise as a new variety due to low percentage of large kernels and minimum color.

D6674 - Shows good promise, based on two crop years' results this selection would show good promise as a new variety.

D6676 - Shows good promise, based on two crop years' results this selection would show good promise as a new variety.

D6714 - Shows good promise.

D6715 - Shows some promise, primarily due to small percentage of large kernels.

D6718 - Shows some promise, minimum color and somewhat erratic results.

D6721 - Shows some promise, due primarily to erratic results.

D6722 - Shows some promise, only the South Dakota samples were undesirable.

D6723 - Shows some promise, South Dakota samples were undesirable.

D6733 - Shows little promise, due to minimum color and minimum kernel size distribution.

D671 - Shows some promise, however, if the erratic results persist in another year's testing this selection would have to rate as having little promise.

D6771 - Shows little promise due to poor kernel characteristics, minimum test weight, 1000 kernel weight, kernel size distribution, and also minimum color.

D6780 - Shows little promise due to poor extraction and minimum color.

SPECIAL NURSERY SAMPLES

California (Table 15). Thirty-three samples were received from the Tulelake, California station. Seven of these samples were the named varieties, Chile - Var. No. 24, Leeds, Oviachik 65, Sentry, and Tehuacan 60.

These samples comprised two experiments, namely, Experiment 007 and Experiment 008.

Selection 63038 from Experiment 007 was the only selection which showed good promise.

Selections 63037, D7064, and D7076 were the only ones from Experiment 007 which showed some promise.

Selections K6800703, K6800718, K6800719, and 6655 were the only selections which showed some promise from Experiment 007.

All the other selections from both experiments showed little or no promise.

Oregon (Table 16). Four samples were received from the Moro, Oregon station. One sample was the durum named variety, Hercules and two were the soft white spring varieties, Federation and Idaed 59. The selection OR69166 showed some promise as a new variety, although it had excellent dust color and spaghetti color, because of the minimum extraction, 1000 kernel weight and kernel size distribution.

Washington (Table 17). Thirty samples were received from the Pullman and Royal Slope, Washington stations. Only two of the samples were named varieties, Leeds and the new variety, Wandell. Five of the Pullman samples were processed by the Macro procedure given in Section A, while six of the Pullman samples and all of the Royal Slope samples were processed by the Micro procedure given in Section B.

The Wandell sample showed some promise because of the low test weight, 1000 kernel weight and small kernel size distribution. The selection NDD06659 shows some promise as a new variety, but has minimum color. The other two selections NDD06647 and NDD06660 show little promise as new varieties because of poor color.

The selection NDD64127-19 shows good promise as a new variety, but does have a tendency towards minimum dust color and semolina extraction. The selection NDD63152-16 shows some promise as a new variety, but has minimum extraction. The other selections from Pullman show little or no promise.

The selections TI165202 and TI165206 show some promise as new varieties, but do tend to exhibit minimum dust color score and extraction. The remainder of the samples from Royal Slope show little or no promise as new varieties.

South Dakota (Table 18). One special sample was received from Garden City, South Dakota, a named variety, Jori, which is a semi-dwarf but showed no promise as a durum variety.

PRELIMINARY YIELD NURSERY SAMPLES

California (Tables 19, 20, & 21). Ninety-four samples were received from the Tulelake, California station. Eleven of these samples were from the F_2 Preliminary Yield Nursery, fifty-eight from the F_3 Preliminary Yield Nursery, and twenty-five from Rupert Experiment No. 26.

F_2 Preliminary Yield Nursery (Table 19). One sample was the named variety, Leeds. Only selection 70-28 showed some promise as a new variety, and all of the other selections show no promise due to poor color.

F_3 Preliminary Yield Nursery (Table 20). The named variety, Sentry was submitted with these samples., and the remaining fifty-seven were selections. Nine of the selections, 70-85, 70-150, 70-168, 70-207, 70-208, 70-209, 70-341, 70-852, and 70-968 showed some promise as new varieties. Most of these exhibited minimum color score or minimum extraction. In some cases, they exhibited both of these characteristics. Nine of the selections showed good promise as new varieties: 70-225, 70-226, 70-228, 70-254, 70-277, 70-284, 70-340, 70-749, and 70-920. Most of the samples showing good promise did tend to have minimum extraction. All of the other selections show little promise.

Rupert Experiment No. 26 (Table 21). Two of the twenty-five samples submitted were the named varieties, Leeds and Sentry. One selection 70-2271 showed some promise as a new variety, having minimum color score. One selection 70-2923 showed good promise as a new selection. All of the other selections showed little or no promise as new varieties.

Washington (Table 22). Forty samples were received from the Pullman, Washington station. Two of these samples were the named varieties, Lakota and Leeds.

Twelve of these selections showed some promise as new varieties and were primarily deficient in color, with the exception of some which had minimum kernel size distribution. Those selections showing

some promise were: 1248, 1250, 1263, 1264, 1267, 1268, 1269, 1271, 1272, 1275, 1276, and 1323.

Four of the selections showed good promise as new varieties, 1249, 1292, 1298, and 1310.

TABLE 1

QUALITY DATA ON ADVANCED YIELD DURUM WHEAT NURSERY SAMPLES

IDAHO 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Semo. Pro. 2/	Pur. Semo. 3/	Semo. Ash 2/	Specks/ 10 Sq.In.	Semo. Abs. 2/	Vis. Color	Tender. Score	Gen. Eval. 4/
				Lg.	Med.	Sm.									
		#/Bu.	g.	%	%	%	%	%	%	%		%			
Aberdeen (Irrigated)															
Leeds	13768	63.8	51.3	84	16	0	15.8	15.5	60.0	.69	37	31.0	8.5	5.15	4
Wandell		62.9	42.0	51	47	2	13.2	11.7	59.6	.66	37	31.0	8.5	3.96	2
D18159-14Y-2C-5Y		62.8	55.6	88	11	1	14.2	12.5	58.5	.63	47	31.0	8.0	3.98	2
D18162-2R-3M-2Y		63.4	56.0	86	14	0	15.0	13.5	58.8	.73	57	31.0	8.0	4.67	3
D18162-2R-4M-2Y		63.6	51.8	87	13	0	14.3	12.7	60.5	.66	30	31.0	8.5	5.07	4
II-20074-4C-1Y-1C		63.4	53.4	90	10	0	14.8	13.4	60.1	.66	40	31.0	6.0	4.19	1
II-20109-2C-12Y-2C		61.0	56.0	88	12	0	15.1	13.7	60.8	.72	23	31.0	6.0	4.77	1

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise.

TABLE 2

QUALITY DATA ON ADVANCED YIELD DURUM WHEAT NURSERY SAMPLES

MONTANA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Semo. Pro. 2/	Pur. Semo. 3/	Semo. Ash 2/	Specks/ 10 Sq.In.	Semo. Abs. 2/	Vis. Color	Tender. Score
				Lg.	Med.	Sm.								
		#/Bu.	g.	%	%	%	%	%	%	%		%		
Belgrade (Non-fertilized)														
Leeds	13768	64.5	40.8	65	34	1	13.5	12.4	60.1	.69	50	31.0	9.5	4.04
Wells	13333	64.0	35.3	45	53	2	11.9	10.9	58.9	.61	23	31.0	9.0	3.92
Belgrade (Fertilized)														
Leeds	13768	64.2	37.9	53	46	1	14.6	13.4	59.6	.67	30	31.0	9.5	4.77
Wells	13333	63.1	34.5	27	71	2	14.1	13.2	53.6	.63	40	31.0	9.0	4.33
Bozeman (Irrigated)														
Wells	13333	64.9	37.6	64	34	2	13.1	11.9	59.8	.60	30	31.0	9.0	4.17
Creston (Dryland)														
Leeds	13768	61.2	38.8	64	35	1	15.1	13.8	56.7	.65	33	31.0	9.0	4.91
Wells	13333	58.8	31.5	41	56	3	15.2	13.7	54.2	.66	40	31.0	9.0	4.69
Havre (Dryland)														
Leeds	13768	63.6	40.7	33	66	1	16.6	15.5	58.6	.66	53	31.0	8.0	4.57
Wells	13333	62.3	33.0	11	86	3	16.2	15.4	57.7	.64	43	31.0	8.0	5.09
Huntley (Dryland)														
Leeds	13768	64.3	38.6	47	52	1	15.3	13.9	57.3	.59	33	31.0	9.0	3.88
Wells	13333	63.5	33.9	24	73	3	14.8	13.4	57.9	.58	17	31.0	9.0	3.56
Moccasin (Dryland)														
Leeds	13768	62.7	30.9	2	96	2	18.1	16.9	53.5	.68	20	31.0	9.0	5.07
Wells	13333	60.6	25.1	0	88	12	18.6	17.2	53.1	.72	40	31.0	9.0	4.75

(CONT'D.)

TABLE 2 (CONT'D.)

QUALITY DATA ON ADVANCED YIELD DURUM WHEAT NURSERY SAMPLES

MONTANA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Semo. Pro. 2/	Pur. Semo. 3/	Semo. Ash 2/	Specks/ 10 Sq.In.	Semo. Abs. 2/	Vis. Color	Tender. Score
				Lg.	Med.	Sm.								
		#/Bu.	g.	%	%	%	%	%	%	%		%		
Sidney (Dryland)														
Leeds	13768	64.5	36.9	42	57	1	15.1	13.8	58.3	.62	13	31.0	9.0	3.76
Wells	13333	64.0	30.6	20	78	2	14.5	13.2	57.7	.58	7	31.0	9.0	3.76
Sidney (Irrigated)														
Leeds	13768	64.1	39.5	56	43	1	13.6	12.4	57.5	.58	40	31.0	9.0	4.79
Wells	13333	64.0	33.8	31	66	3	13.5	12.0	58.0	.61	37	31.0	8.5	3.96

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified

TABLE 3

QUALITY DATA ON ADVANCED YIELD DURUM WHEAT NURSERY SAMPLES

OREGON

1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Moro												
Lakota	13335	59.0	27.1	2	81	17	11.1	50.0	90	-	-	4
Langdon	13165	59.5	27.4	3	81	16	11.9	49.1	80	-	-	1
Hercules		60.5	38.2	23	72	5	12.1	53.5	83	-	-	2
Wells	13333	61.0	26.5	2	85	13	11.0	50.9	92	-	-	4
Wandell		59.5	26.5	1	75	24	10.4	53.6	95	34.3	9.5	4
OR 69166		58.0	30.0	2	84	14	12.1	52.3	97	38.0	9.5	4
Pendleton												
Federation	4734	55.0	24.9	4	86	10	14.3	23.5	W	-	-	1
Hercules		56.0	38.2	34	57	9	15.9	51.2	80	-	-	1
Idaed 59	13631	56.5	27.2	18	74	8	15.6	32.5	W	-	-	1
Lakota	13335	55.5	2[illegible].3	5	82	13	16.6	47.2	85	-	-	3
Langdon	13165	56.5	29.4	7	78	15	16.1	47.5	70	-	-	1
Wells	13333	57.0	27.8	5	83	12	16.2	49.1	85	-	-	4
Wandell		56.5	26.3	1	72	27	15.8	50.7	98	36.3	9.5	4
OR 69166		55.5	31.1	9	79	12	16.9	51.1	85	36.3	9.5	4

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 4

QUALITY DATA ON ADVANCED YIELD DURUM WHEAT NURSERY SAMPLES

SOUTH DAKOTA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Bison												
Hercules		59.5	36.8	24	73	3	16.9	52.6	87	-	-	4
Leeds	13768	62.5	33.6	20	76	4	16.8	52.8	93	-	-	4
Wells	13333	62.5	29.7	6	86	8	16.3	53.0	92	-	-	3
DT 316		61.0	33.4	7	88	5	16.8	52.6	91	-	-	3
Brookings												
Hercules		62.0	41.3	56	42	2	14.0	54.7	89	-	-	4
Leeds	13768	63.5	41.7	54	43	3	15.6	52.5	91	-	-	4
Wells	13333	62.0	33.4	35	59	6	14.7	54.4	89	-	-	4
DT 316		60.0	36.0	30	66	4	13.7	52.8	89	-	-	3
Eureka												
Hercules		57.5	34.1	14	80	6	19.2	51.2	89-R	-	-	1
Leeds	13768	59.5	29.9	6	83	11	19.7	50.0	92	-	-	4
Wells	13333	56.0	23.5	1	73	26	20.1	47.6	89	-	-	3
DT 316		57.5	27.3	2	86	12	20.9	49.4	92	-	-	3
Highmore												
Hercules		57.0	33.7	12	82	6	19.4	51.1	82-R	-	-	1
Leeds	13768	61.5	33.2	10	86	4	18.4	53.1	92	-	-	4
Wells	13333	60.0	28.9	5	84	11	15.5	50.9	84-R	-	-	2
DT 316		59.0	31.7	4	88	8	15.7	52.1	84-R	-	-	2

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 5

QUALITY DATA ON ADVANCED YIELD DURUM WHEAT NURSERY SAMPLES

WASHINGTON

1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
				Lg.	Med.	Sm.						
		#/Bu.	g.	%	%	%	%	%		%		
Ellensburg												
Leeds	13768	65.0	40.2	53	44	3	12.2	52.2	85	37.0	8.5	4
Sentry	13102	65.0	40.7	61	38	1	12.2	49.6	70-G	-	-	1
Wandell		64.0	40.2	55	43	2	9.6	49.8	70	39.0	8.5	3
D6300008		64.5	41.0	49	49	2	11.7	50.0	75	-	-	1
NDD06647		65.5	41.5	76	22	2	10.6	51.3	60	-	-	1
NDD06655		65.0	48.0	80	19	1	10.5	50.3	60	-	-	1
NDD06659		65.5	45.0	79	20	1	10.1	51.3	75	38.3	8.5	3
NDD06660		65.5	49.0	81	18	1	10.4	51.5	75	40.0	8.5	3
NDD66102		64.5	47.6	81	18	1	9.9	49.8	65	37.3	7.5	1
K6800703		65.0	45.7	76	23	1	10.5	50.8	75	-	-	1
Othello												
Leeds	13768	63.5	43.1	65	28	7	14.2	51.2	90-B	36.0	9.5	4
Sentry	13102	62.0	39.5	51	47	2	13.8	46.5	75	-	-	1
Wandell		62.5	37.2	27	69	4	12.0	52.6	87	38.0	9.0	3
D6300008		61.5	41.7	39	58	3	13.5	51.0	75	-	-	1
NDD 06647		63.0	46.3	63	36	1	12.8	52.6	73	-	-	1
NDD06655		63.0	47.1	75	24	1	12.9	52.1	75	-	-	1
NDD06659		63.5	48.8	75	24	1	13.5	53.0	80	38.3	8.5	2
NDD06660		63.0	46.5	71	28	1	13.2	52.7	83	38.0	8.5	2
NDD66102		62.0	44.8	63	36	1	13.7	51.6	87	35.3	9.0	3
K6800703		63.0	45.5	67	32	1	13.5	51.3	88	-	-	1

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red, B - Brown, G - Gray
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 6

QUALITY DATA ON ADVANCED YIELD DURUM WHEAT NURSERY SAMPLES

WASHINGTON

1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Royal Slope												
Lakota	13335	62.0	36.6	49	48	3	13.6	48.9	80	-	-	1
Langdon	13165	63.5	46.7	71	28	1	14.7	54.1	78	-	-	1
Leeds	13768	64.0	41.5	67	32	1	14.5	52.8	92	35.3	9.5	4
Stewart 63	13771	62.5	42.4	64	35	1	14.3	46.6	60	-	-	1
Wandell		62.5	34.6	26	69	5	12.4	53.6	88	37.0	9.0	3
WA005290		63.5	41.8	64	35	1	13.6	52.6	78	-	-	1
D6300008		62.5	43.1	46	53	1	13.8	54.2	78	-	-	1
M6300018		64.0	42.4	59	40	1	14.0	53.0	80	-	-	1
M6300037		63.0	39.7	44	55	1	14.9	52.9	78	-	-	1
NDD06636		63.5	47.1	73	26	1	14.1	54.3	82	-	-	1
NDD06645		63.0	50.5	76	23	1	13.6	52.4	80	-	-	1
NDD06647		64.0	42.9	61	38	1	13.1	54.7	78	36.7	8.5	1
NDD06655		64.0	46.1	67	32	1	12.7	55.5	75	-	-	1
NDD06659		63.5	46.1	65	34	1	12.9	54.7	85	37.0	9.0	3
NDD06660		64.0	47.1	70	29	1	13.4	55.1	87	38.3	8.5	2
NDD66102		63.5	46.1	69	30	1	12.9	53.7	83	37.3	8.5	2
K6800703		63.0	45.8	67	32	1	13.0	54.5	88	-	-	3
K6800707		63.5	41.7	64	35	1	13.5	54.3	97	36.7	10.0	4
K6800708		63.0	44.6	68	31	1	14.1	53.1	85	-	-	3
K6800718		63.0	44.8	65	34	1	12.8	53.5	87	36.3	9.0	3
K6800719		63.5	50.3	82	17	1	13.9	52.4	89	40.0	8.5	3

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 7

QUALITY DATA ON FIELD PLOT DURUM WHEAT NURSERY SAMPLES

NORTH DAKOTA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Semo. Pro. 2/	Pur. Semo. 3/	Semo. Ash 2/	Specks/ 10 Sq.In.	Semo. Abs. 2/	Vis. Color	Tender. Score	Gen. Eval. 4/
				Lg.	Med.	Sm.									
		#/Bu.	g.	%	%	%	%	%	%	%		%			
Dickinson															
Hercules		60.0	39.5	55	43	2	16.6	15.8	59.0	.68	30	31.0	8.0	5.59	3
Leeds	13768	59.9	34.2	36	62	2	16.4	15.3	57.9	.68	30	31.0	8.5	4.69	4
Wells	13333	59.8	31.4	24	73	3	16.1	14.9	57.3	.68	23	31.0	9.5	6.51	3
D6517		59.7	39.2	53	45	2	18.0	16.4	60.5	.75	40	31.0	9.0	5.09	3
D6586		60.5	36.0	42	56	2	15.9	15.0	61.2	.68	30	31.0	9.5	4.35	4
D6723		60.4	36.6	38	60	2	14.8	13.8	59.9	.60	27	31.0	9.0	4.43	4
D6780		60.9	39.7	42	56	2	14.2	12.9	59.4	.58	30	31.0	8.5	3.88	3
70-70		59.8	37.0	58	41	1	16.2	15.4	59.6	.65	23	31.0	8.5	5.07	4
Williston															
Hercules		61.7	38.9	49	50	1	16.2	15.3	61.0	.64	40	31.0	8.5	5.89	2
Leeds	13768	63.3	37.3	40	59	1	16.0	15.1	60.0	.64	27	31.0	10.0	5.05	4
Mindum	5296	60.5	37.3	48	50	2	15.5	14.3	59.3	.60	20	31.0	8.5	5.39	2
D6517		62.6	41.2	49	50	1	17.9	17.0	60.1	.65	40	31.0	9.0	5.75	3
D6586		62.3	36.2	29	68	3	15.0	14.2	61.8	.61	20	31.0	10.0	5.43	3
70-70		61.5	38.0	47	52	1	15.9	15.4	59.7	.64	30	31.0	9.0	5.31	3

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 8

QUALITY DATA ON INTERNATIONAL YIELD DURUM WHEAT NURSERY SAMPLES

CALIFORNIA — SECTION A — 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Semo. Pro. 2/	Pur. Semo. 3/	Semo. Ash 2/	Specks/ 10 Sq.In.	Semo. Abs. 2/	Vis. Color	Tender. Score	Gen. Eval. 4/
		#/Bu.	g.	%	%	%	%	%	%	%		%			
Davis															
Albatross		63.2	66.7	94	6	0	13.4	12.4	61.6	.64	30	31.0	7.5	4.02	1
Anhinga (S)		64.1	54.3	84	16	0	13.3	12.0	61.6	.60	27	31.0	6.0	4.08	1
Brant		61.7	54.0	80	19	1	12.0	10.9	63.0	.63	47	31.0	6.0	3.44	1
Crane		63.3	57.8	88	12	0	11.3	10.1	62.9	.61	33	31.0	6.0	3.20	1
Leeds	13768	63.3	38.9	27	72	1	13.8	13.1	61.6	.69	37	31.0	9.0	3.00	4
61-130 x Leeds		62.2	42.7	32	66	2	11.8	10.9	61.1	.68	20	31.0	9.0	3.62	4

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 8 (CONT'D.)

QUALITY DATA ON INTERNATIONAL YIELD DURUM WHEAT NURSERY SAMPLES

WASHINGTON | SECTION B | 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
				Lg.	Med.	Sm.						
		#/Bu.	g.	%	%	%	%	%		%		
Royal Slope												
Albatross		62.5	51.0	84	14	2	14.9	52.7	60	-	-	1
Anhinga (S)		63.0	50.4	78	20	2	14.7	52.4	80	38.7	7.5	1
Brant		62.5	46.9	73	24	3	13.8	53.0	70	-	-	1
Capeiti		63.0	49.3	83	16	1	15.5	52.3	87-R	38.3	8.5	2
Casteldelmonte I		63.5	45.7	76	23	1	13.4	52.8	85	37.7	8.5	3
Crane		62.5	46.7	72	27	1	12.6	51.7	75	37.7	7.5	1
Gerondo V-2-466		62.0	53.2	79	19	2	15.0	54.7	83	36.3	7.5	1
Inia 66		63.0	43.7	67	31	2	13.6	52.9	W	-	-	1
Tehuacan		63.0	56.8	87	12	1	15.3	52.2	78	-	-	1
Wandell		62.0	36.6	20	76	4	12.6	54.0	90	37.0	9.0	3
Wells	13333	63.0	36.7	47	50	3	14.3	52.6	88	-	-	3
GA B-125		60.5	53.5	84	15	1	14.5	52.1	78	-	-	1
S-9		63.0	42.9	59	39	2	14.2	52.1	83-R	-	-	2
61-130 x Leeds [(Dure-Turg) ST 464]	TC^2	63.0 60.0	46.1 44.8	63 76	36 22	1 2	13.5 12.3	53.9 54.2	86 79	36.7 -	8.5 -	3 1
Leeds	13768	63.0	44.6	63	36	1	15.4	51.4	98	36.7	9.0	4

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 9

QUALITY DATA ON UNIFORM REGIONAL DURUM WHEAT NURSERY SAMPLES

MINNESOTA

1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
				Lg.	Med.	Sm.						
		#/Bu.	g.	%	%	%	%	%		%		
Crookston												
Hercules		64.0	42.9	55	42	3	11.2	57.4	91	-	-	4
Leeds	13768	67.0	40.3	57	39	4	12.3	58.1	93	-	-	4
Wells	13333	64.0	34.8	31	66	3	11.3	56.3	89	-	-	3
DT317		64.0	43.9	63	34	3	11.0	55.6	95	-	-	4
D6517		65.0	42.6	55	42	3	12.6	57.2	91	-	-	4
D6586		64.0	41.2	45	52	3	11.3	58.8	92	-	-	4
D6647		65.0	40.8	40	57	3	11.1	56.9	87	-	-	3
D6674		64.0	41.2	48	48	4	10.9	57.3	93	-	-	4
D6676		65.0	40.2	53	44	3	11.2	57.8	92	-	-	4
D6714		65.0	41.5	49	48	3	10.7	57.6	90	-	-	4
D6715		65.0	39.8	55	42	3	11.8	57.8	93	-	-	4
D6718		64.0	43.3	63	34	3	12.1	57.6	91	-	-	4
D6721		65.0	41.7	42	54	4	11.4	58.9	91	-	-	4
D6722		65.0	41.5	42	55	3	11.3	56.9	93	-	-	4
D6723		65.0	37.6	41	54	5	10.6	58.0	92	-	-	4
D6733		64.0	38.8	56	35	9	12.2	57.6	91	-	-	4
D6761		64.0	41.8	63	34	3	11.1	56.7	93	-	-	4
D6771		65.0	36.1	37	59	4	12.0	56.7	91	-	-	4
D6780		63.0	37.0	42	54	4	10.5	54.9	87	-	-	2

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 10

QUALITY DATA ON UNIFORM REGIONAL DURUM WHEAT NURSERY SAMPLES

MINNESOTA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
				Lg.	Med.	Sm.						
		#/Bu.	g.	%	%	%	%	%		%		
Morris												
Hercules		62.0	40.2	51	47	2	12.8	54.3	86	-	-	3
Leeds	13768	64.0	38.9	43	54	3	13.9	54.6	93	-	-	4
Mindum	5296	62.0	34.4	14	78	8	11.6	56.3	84	-	-	2
Wells	13333	62.5	31.3	24	71	5	13.0	54.9	89	-	-	3
DT317		61.0	38.3	51	46	3	13.1	53.7	92	-	-	4
D6517		64.0	42.0	51	47	2	14.0	57.1	88	-	-	3
D6586		63.0	37.6	34	63	3	12.5	56.3	89	-	-	3
D6647		63.0	39.2	21	76	3	12.9	55.5	89	-	-	3
D6674		63.0	40.0	37	60	3	11.8	55.2	91	-	-	4
D6676		62.0	44.2	41	55	4	12.6	55.3	91	-	-	4
D6714		63.5	40.8	37	61	2	11.5	56.6	90	-	-	4
D6715		63.0	42.4	26	69	5	12.3	55.5	91	-	-	4
D6718		64.0	44.2	46	51	3	11.7	55.8	88	-	-	3
D6721		62.5	42.0	36	60	4	13.9	56.0	89	-	-	3
D6722		62.5	41.7	40	55	5	11.8	55.5	92	-	-	4
D6723		62.5	40.3	38	57	5	12.7	56.6	91	-	-	4
D6733		64.0	39.8	37	60	3	12.6	55.7	89	-	-	3
D6761		63.0	37.5	41	55	4	12.8	55.7	89	-	-	3
D6771		62.0	33.0	22	73	5	12.8	54.3	88	-	-	3
D6780		61.0	35.8	19	76	5	10.8	52.5	85	-	-	2

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 11

QUALITY DATA ON UNIFORM REGIONAL DURUM WHEAT NURSERY SAMPLES

MINNESOTA

1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
St. Paul												
Hercules		59.0	33.2	20	74	6	18.5	52.8	79-R	-	-	1
Leeds	13768	60.0	31.5	16	77	7	18.1	49.5	95	-	-	4
Mindum	5296	59.0	31.1	32	61	7	16.3	54.0	70-R	-	-	1
Wells	13333	58.0	28.7	12	77	11	17.2	51.2	85	-	-	3
DT317		57.0	33.1	28	65	7	17.4	50.0	95	-	-	4
D6517		61.0	29.9	16	73	11	17.5	54.4	83-R	-	-	2
D6586		59.0	31.2	16	74	10	17.3	53.7	84-R	-	-	2
D6647		61.0	31.2	19	73	8	16.6	54.5	85	-	-	3
D6674		59.0	31.9	20	73	7	17.7	51.9	91	-	-	4
D6676		60.0	33.9	21	72	7	16.9	53.5	91	-	-	4
D6714		61.0	32.8	11	82	7	16.4	52.1	91	-	-	4
D6715		58.0	28.1	6	82	12	17.2	52.1	91	-	-	3
D6718		61.0	31.9	19	74	7	17.1	51.8	87	-	-	3
D6721		59.0	30.4	11	78	11	17.4	53.6	90	-	-	4
D6722		61.0	31.5	17	75	8	17.2	52.5	92	-	-	4
D6723		59.0	36.4	19	71	10	17.0	52.8	94	-	-	4
D6733		61.0	36.1	24	69	7	17.9	51.8	75-G	-	-	1
D6761		60.0	37.6	22	69	9	16.9	52.5	80-R	-	-	1
D6771		56.0	29.8	2	78	20	18.1	50.2	94	-	-	2
D6780		61.0	38.0	15	74	11	15.5	51.6	92	-	-	4

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red, G - Gray.
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 12

QUALITY DATA ON UNIFORM REGIONAL DURUM WHEAT NURSERY SAMPLES

NORTH DAKOTA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Carrington (Irrigated)												
Hercules		62.0	44.8	73	26	1	15.4	55.5	89	-	-	3
Leeds	13768	63.0	39.1	48	51	1	15.2	53.9	92	-	-	4
Mindum	5296	60.5	34.4	17	79	4	13.6	54.1	87	-	-	3
Wells	13333	63.0	33.8	29	68	3	14.3	54.8	88	-	-	3
DT317		61.0	42.6	65	34	1	15.4	52.5	91	-	-	4
D6517		63.0	45.7	61	38	1	15.7	56.3	80-R	-	-	1
D6586		62.0	42.9	43	55	2	14.3	56.3	91	-	-	4
D6647		62.0	40.3	21	78	1	14.1	57.2	90	-	-	3
D6674		62.5	44.4	51	47	2	14.8	56.7	91	-	-	4
D6676		62.0	42.6	49	50	1	14.9	54.7	92	-	-	4
D6714		61.5	44.8	59	40	1	14.3	53.5	91	-	-	4
D6715		61.5	45.5	57	42	1	14.6	54.7	91	-	-	4
D6718		62.5	43.9	40	59	1	14.7	56.0	91	-	-	4
D6721		62.5	43.7	51	48	1	14.6	56.7	91	-	-	4
D6722		62.5	43.3	51	48	1	14.7	55.3	91	-	-	4
D6723		62.5	43.7	51	47	2	14.3	55.6	91	-	-	4
D6733		62.5	40.7	33	66	1	14.6	55.6	91	-	-	3
D6761		63.0	48.0	56	43	1	13.9	56.9	91	-	-	4
D6771		60.5	39.5	33	65	2	14.9	53.0	87	-	-	3
D6780		63.0	45.5	35	64	1	13.2	54.6	88	-	-	3
70-70		63.0	47.8	69	30	1	15.2	57.2	88	-	-	3

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W- White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 13

QUALITY DATA ON UNIFORM REGIONAL DURUM WHEAT NURSERY SAMPLES

SOUTH DAKOTA

1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
				Lg.	Med.	Sm.						
		#/Bu.	g.	%	%	%	%	%		%		
Eureka												
Hercules		58.5	31.2	18	77	5	18.7	53.5	70	-	-	1
Leeds	13768	60.0	32.2	9	85	6	18.5	54.9	93	-	-	4
Mindum	5296	58.0	27.0	1	81	18	19.3	53.0	65	-	-	1
Wells	13333	58.5	25.3	3	79	18	18.8	51.4	81-R	-	-	1
DT317		57.0	30.6	10	83	7	19.6	52.6	93	-	-	4
D6517		60.0	31.5	5	88	7	18.7	54.8	87	-	-	3
D6586		59.5	31.1	7	88	5	17.4	54.7	80-G	-	-	1
D6647		58.5	27.3	1	84	15	18.2	53.0	91	-	-	3
D6674		59.0	29.5	4	85	11	18.2	53.5	91	-	-	3
D6676		59.0	29.7	5	86	9	18.0	53.9	92	-	-	3
D6714		57.5	27.0	2	87	11	19.2	50.7	92	-	-	3
D6715		57.5	26.5	1	84	15	19.4	51.2	91	-	-	3
D6718		60.0	30.9	5	88	7	18.5	52.5	91	-	-	3
D6721		58.0	27.9	2	84	14	19.1	49.5	88	-	-	2
D6722		58.0	27.1	1	85	14	19.2	49.5	92	-	-	2
D6723		59.0	30.9	10	86	4	18.2	49.5	91	-	-	3
D6733		59.0	27.6	5	84	11	20.0	49.5	91	-	-	2
D6761		59.0	29.3	4	87	9	18.7	49.3	93	-	-	3
D6771		56.0	24.8	3	80	17	19.0	47.5	91	-	-	1
D6780		56.0	25.4	1	71	28	19.4	47.2	92	-	-	1

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red, G - Gray
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 14

QUALITY DATA ON UNIFORM REGIONAL DURUM WHEAT NURSERY SAMPLES

SOUTH DAKOTA

1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Watertown												
Hercules		59.0	36.1	33	65	2	16.8	51.6	75	-	-	1
Leeds	13768	60.5	31.6	15	80	5	17.1	52.6	92	-	-	4
Mindum	5296	57.0	23.5	1	77	22	16.9	51.8	77-R	-	-	1
Wells	13333	60.0	27.0	5	83	12	17.3	50.0	91	-	-	3
DT317		58.0	31.2	16	79	5	17.8	49.8	94	-	-	4
D6517		61.5	26.4	16	79	5	17.1	54.4	88	-	-	3
D6586		60.0	31.3	10	83	7	17.7	52.1	91	-	-	4
D6647		61.0	31.7	5	90	5	16.7	53.0	90	-	-	3
D6674		59.5	32.2	11	82	7	17.2	52.5	91	-	-	4
D6676		60.0	28.2	7	83	10	17.4	52.5	90	-	-	3
D6714		59.0	30.3	5	89	6	17.1	52.8	90	-	-	3
D6715		59.0	29.4	3	90	7	18.4	51.6	90	-	-	3
D6718		60.0	30.2	6	87	7	17.0	53.2	91	-	-	3
D6721		61.0	32.8	7	88	5	17.1	53.2	90	-	-	3
D6722		60.5	29.8	5	89	6	16.7	52.8	91	-	-	3
D6723		60.0	31.7	7	89	4	18.4	52.3	86	-	-	2
D6733		61.0	30.1	9	86	5	18.4	52.1	89	-	-	3
D6761		60.5	34.4	10	87	3	17.3	52.8	91	-	-	4
D6771		59.5	29.5	5	88	7	17.2	50.2	78-R	-	-	1
D6780		60.0	31.8	4	89	7	16.9	51.4	79-R	-	-	1

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red.
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 15

QUALITY DATA ON SPECIAL DURUM WHEAT NURSERY SAMPLES

CALIFORNIA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
				Lg.	Med.	Sm.						
		#/Bu.	g.	%	%	%	%	%		%		
Tulelake (Experiment 007)												
Chile (Var. 24)		63.0	38.9	45	51	4	12.9	55.9	80	-	-	1
Leeds	13768	64.5	42.4	64	33	3	13.9	57.3	93	35.3	9.5	4
Oviachic 65		64.0	54.9	87	12	1	12.8	55.4	80	-	-	1
Sentry	13102	64.5	44.6	65	33	2	14.5	55.8	90	35.7	9.0	3
Tehuacan 60		65.0	56.5	89	9	2	15.2	55.2	78-R	-	-	1
ND 6644		63.5	50.7	80	18	2	14.9	56.6	83	-	-	2
ND 6654		64.5	50.4	77	20	3	13.7	57.2	83	-	-	2
63037		64.0	50.6	87	11	2	13.3	54.1	85	37.7	9.0	3
63038		63.5	44.4	60	37	3	12.7	56.8	86	37.3	9.5	4
D7064		63.5	50.6	87	10	3	12.7	56.8	80	-	-	2
D7065		63.0	49.2	83	15	2	11.7	53.6	60	-	-	1
D7066		63.0	50.4	89	10	1	13.0	54.4	60	-	-	1
D7067		63.5	50.7	89	9	2	14.1	54.9	70	-	-	1
D7068		65.0	54.5	85	13	2	13.1	55.5	70	-	-	1
D7069		64.5	52.8	87	2	11	13.1	53.6	70	-	-	1
D7070		65.0	50.2	83	16	1	12.2	54.5	80	-	-	2
D7071		63.5	50.2	85	12	3	13.1	55.3	60	-	-	1
D7072		65.5	53.2	84	14	2	12.1	55.1	70	-	-	1
D7073		65.0	50.4	68	30	2	11.6	56.6	80	-	-	2
D7074		62.5	55.5	87	11	2	13.2	55.4	85	39.0	8.5	2
D7075		64.0	59.8	91	7	2	13.9	54.4	70	-	-	1
D7076		63.5	56.5	83	15	2	13.6	55.0	88	39.3	9.0	3

(CONT'D.)

TABLE 15 (CONT'D.)

QUALITY DATA ON SPECIAL DURUM WHEAT NURSERY SAMPLES

CALIFORNIA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
				Lg.	Med.	Sm.						
		#/Bu.	g.	%	%	%	%	%		%		
Tulelake (Experiment 008)												
Leeds	13768	65.5	47.6	60	38	2	14.3	55.7	92	36.0	9.5	4
Oviachic 65		64.0	47.4	84	14	2	13.2	53.2	80	-	-	1
D6300008		64.5	45.5	43	54	3	13.5	55.2	85	36.3	8.5	2
K6800703		64.5	47.6	69	28	3	12.5	55.9	87	37.0	9.0	3
K6800718		64.0	47.4	67	31	2	12.6	55.1	85	36.3	9.0	3
K6800719		64.5	47.6	81	16	3	14.2	54.2	87	36.7	9.0	3
ND 6647		64.5	47.4	67	30	3	12.6	56.5	83	-	-	2
ND 6655		64.5	47.1	50	49	1	13.3	56.1	87	36.0	8.5	3
ND 6659		64.0	47.8	71	27	2	13.1	55.9	85	36.0	8.5	2
ND 6660		64.5	50.7	75	23	2	13.2	55.6	85	35.3	8.5	2
ND 66102		64.0	46.3	69	29	2	12.7	54.8	85	34.7	8.5	2

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 16

QUALITY DATA ON SPECIAL DURUM WHEAT NURSERY SAMPLES

OREGON 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Moro												
Federation	4737	59.5	28.2	19	73	8	9.6	27.3	W	-	-	1
Hercules		61.0	37.3	18	77	5	12.4	53.9	75	-	-	1
Idaed 59	13631	59.0	25.4	8	86	6	10.4	36.4	W	-	-	1
OR 69166		59.5	29.3	3	83	14	12.0	51.9	92	38.3	9.5	3

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red.
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 17

QUALITY DATA ON SPECIAL DURUM WHEAT NURSERY SAMPLES

WASHINGTON SECTION A 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Semo. Pro. 2/	Pur. Semo. 3/	Semo. Ash 2/	Specks/ 10 Sq.In.	Semo. Abs. 2/	Vis. Color	Tender. Score	Gen. Eval. 4/
		#/Bu.	g.	%	%	%	%	%	%	%		%			
Pullman															
Leeds	13768	63.9	42.7	76	23	1	14.1	13.0	62.3	.66	17	31.0	9.0	3.48	4
Wandell		62.7	37.0	32	63	5	11.7	10.3	60.0	.64	20	31.0	9.0	3.66	3
NDD06647		64.2	44.8	70	28	2	12.4	11.0	61.3	.59	13	31.0	8.0	3.62	2
NDD06659		64.0	46.7	74	24	2	13.0	11.5	61.1	.59	23	31.0	8.5	3.42	3
NDD06660		64.1	46.3	76	22	2	13.0	11.5	61.4	.60	17	31.0	8.0	3.38	2

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 17 (CONT'D.)

QUALITY DATA ON SPECIAL DURUM WHEAT NURSERY SAMPLES

WASHINGTON SECTION B 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
				Lg.	Med.	Sm.						
		#/Bu.	g.	%	%	%	%	%		%		
Pullman												
MX 6810372		62.5	48.3	82	16	2	12.6	51.1	60	-	-	1
NDD 63152-16		63.0	50.0	83	14	3	15.2	54.9	88	36.3	9.0	3
NDD 64127-19		64.0	46.9	77	21	2	13.2	57.6	92	36.3	10.0	4
NDD 65015-17		62.5	49.5	83	15	2	13.6	53.2	90	37.0	8.5	3
NDD 65015-19		62.5	45.8	73	24	3	11.7	49.2	60	-	-	1
NDD 66255-173		63.5	52.3	87	12	1	13.9	54.2	80	-	-	2
Royal Slope												
MX 6810372		62.0	47.4	75	22	3	12.7	50.7	60	-	-	1
MX 6810373		64.0	50.0	79	20	1	13.6	52.9	75	-	-	1
MX 6810381		62.5	46.5	66	33	1	12.7	51.5	75	-	-	1
MX 6810383		63.5	53.2	85	14	1	14.1	51.7	70	-	-	1
PI 165173		60.5	62.1	85	12	3	14.1	53.5	73	-	-	1
PI 165182		62.0	59.5	88	10	2	14.6	53.8	75	-	-	1
PI 165187		61.0	63.7	91	8	1	13.9	53.5	70	-	-	1
PI 165192		62.5	58.5	89	9	2	13.8	52.9	75	-	-	1
PI 165202		63.0	61.7	87	11	2	13.7	53.1	88	39.7	8.5	3
PI 165206		62.5	59.8	86	12	2	13.8	53.7	85	39.0	9.0	3
PI 165217		63.0	60.9	89	10	1	13.6	53.0	75	-	-	1
PI 166858		61.0	61.7	87	11	2	14.1	52.4	78	-	-	2
PI 166865		60.5	54.6	85	13	2	14.3	53.4	75	-	-	1
PI 166926		61.5	59.5	87	11	2	14.1	55.8	72	-	-	1
PI 173496		61.0	57.8	86	11	3	13.8	52.8	75	-	-	1
PI 178034		61.5	62.1	87	11	2	13.7	51.4	65	-	-	1
PI 178207		61.5	55.2	83	14	3	13.8	53.1	60	-	-	1
PI 245649		63.0	63.7	90	9	1	12.2	54.8	70	-	-	1
PI 245651		63.0	63.3	89	10	1	11.9	54.1	78	-	-	2

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 18

QUALITY DATA ON SPECIAL DURUM WHEAT NURSERY SAMPLE

SOUTH DAKOTA

1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Garden City												
Jori		61.5	43.5	64	34	2	15.3	53.8	83	37.0	7.5	1

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 19

QUALITY DATA ON PRELIMINARY YIELD DURUM WHEAT NURSERY SAMPLES

CALIFORNIA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Tulelake (F_2)												
Leeds	13768	64.0	50.2	83	17	0	15.6	51.7	87	35.3	9.0	4
70-3		63.0	56.8	89	11	0	13.6	50.5	70	-	-	1
70-5		63.5	58.1	90	10	0	13.1	51.1	80	-	-	2
70-8		60.0	55.5	88	12	0	13.2	45.7	65	-	-	1
70-10		63.0	56.5	93	7	0	12.2	47.6	60	-	-	1
70-13		64.0	57.8	92	8	0	13.7	48.2	70	-	-	1
70-18		62.5	55.2	92	6	2	13.7	49.7	70	-	-	1
70-20		64.5	57.1	93	6	1	12.1	49.1	72	-	-	1
70-23		63.0	51.2	88	10	2	12.1	52.7	70	-	-	1
70-25		63.5	49.0	88	11	1	11.7	52.0	73	-	-	1
70-28		61.5	58.8	94	4	2	13.8	50.6	83	-	-	3

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 20

QUALITY DATA ON PRELIMINARY YIELD DURUM WHEAT NURSERY SAMPLES

CALIFORNIA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Tulelake (F$_3$)												
Sentry	13102	63.0	49.0	79	19	2	14.9	53.3	88	34.3	8.5	3
70-28		65.0	51.8	84	15	1	12.8	54.0	70	-	-	1
70-41		65.5	56.2	86	13	1	12.2	54.4	72	-	-	1
70-45		65.0	57.1	86	13	1	12.7	54.0	80	-	-	2
70-47		64.5	56.0	92	7	1	12.3	51.4	70	-	-	1
70-48		65.0	56.8	88	10	2	12.7	53.0	70	-	-	1
70-49		65.5	56.2	91	8	1	14.1	49.5	80	-	-	2
70-50		64.5	54.0	89	10	1	13.1	51.6	80	-	-	2
70-68		64.0	53.3	79	19	2	12.3	49.7	70	-	-	1
70-81		65.5	53.5	88	11	1	12.9	51.4	72	-	-	1
70-82		65.0	50.8	86	13	1	13.1	49.8	72	-	-	1
70-85		65.0	51.0	85	14	1	12.3	51.2	88	37.0	8.5	3
70-88		64.5	51.0	83	14	3	11.8	50.7	70	-	-	1
70-124		66.0	51.0	86	13	1	12.4	50.7	72	-	-	1
70-133		65.5	50.5	86	13	1	12.7	51.2	73	-	-	1
70-136		66.0	55.8	88	11	1	12.3	50.2	72	-	-	1
70-137		65.5	55.2	84	15	1	13.0	51.4	72	-	-	1
70-138		65.5	55.2	80	19	1	12.7	51.6	73	-	-	1
70-140		65.5	55.6	86	13	1	12.7	51.4	70	-	-	1
70-141		65.0	55.6	87	12	1	12.8	52.1	73	-	-	1
70-144		65.5	55.2	84	14	2	12.8	49.3	73	-	-	1
70-148		66.0	57.5	86	13	1	12.9	50.3	73	-	-	1
70-150		66.0	56.8	88	11	1	12.6	50.5	83	-	-	3
70-168		65.5	54.9	90	9	1	12.3	49.1	82	-	-	3
70-170		66.0	52.6	86	13	1	11.9	52.8	81	-	-	2

(CONT'D.)

TABLE 20 (CONT'D.)

QUALITY DATA ON PRELIMINARY YIELD DURUM WHEAT NURSERY SAMPLES

CALIFORNIA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size			Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
				Lg.	Med.	Sm.						
		#/Bu.	g.	%	%	%	%	%		%		
Tulelake (F_3 Cont'd.)												
70-177		66.0	52.6	80	18	2	12.0	50.5	81	-	-	2
70-202		64.5	56.2	86	12	2	12.8	50.2	80	-	-	2
70-207		64.5	53.0	84	15	1	13.0	49.3	83	-	-	3
70-208		64.5	54.0	85	13	2	13.0	50.9	83	-	-	3
70-209		65.5	54.3	88	11	1	12.7	50.5	83	-	-	3
70-225		66.5	53.0	89	10	1	12.8	49.1	90	36.7	9.0	4
70-226		65.0	52.6	87	12	1	12.7	49.8	91	37.0	9.0	4
70-228		65.5	52.3	85	14	1	12.4	50.9	85	36.3	9.0	4
70-231		64.0	56.6	89	10	1	12.2	52.3	72	-	-	1
70-233		65.0	53.3	88	11	1	13.7	49.1	80	-	-	2
70-254		65.5	51.5	83	16	1	12.9	49.3	90	35.3	10.0	4
70-277		65.0	53.8	88	11	1	12.8	50.5	89	35.0	9.5	4
70-284		65.0	56.8	91	8	1	13.0	51.7	87	38.0	9.5	4
70-340		65.5	51.0	85	14	1	12.5	50.8	87	37.3	9.0	4
70-341		66.0	54.1	89	11	0	12.8	51.6	83	-	-	3
70-360		66.0	55.6	88	11	1	13.6	50.8	73	-	-	1
70-365		63.5	52.9	89	10	1	12.8	51.6	80	-	-	2
70-384		64.5	48.3	82	17	1	13.0	52.1	80	-	-	2
70-674		65.0	54.3	88	11	1	12.4	52.2	70	-	-	1
70-736		65.5	54.6	88	11	1	12.8	53.2	72	-	-	1
70-738		66.5	55.2	90	10	0	12.8	51.6	72	-	-	1
70-743		65.5	47.6	84	16	0	13.9	52.0	73	-	-	1
70-745		65.0	47.8	82	18	0	13.3	51.6	80	-	-	2
70-749		65.5	53.8	89	10	1	13.2	51.8	85	35.7	9.0	4

(CONT'D.)

TABLE 20 (CONT'D.)

QUALITY DATA ON PRELIMINARY YIELD DURUM WHEAT NURSERY SAMPLES

CALIFORNIA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Tulelake (F_3 Cont'd.)												
70-771		66.0	55.6	90	10	0	12.8	52.0	73	-	-	1
70-792		66.0	49.0	86	14	0	12.6	52.1	79	-	-	1
70-799		66.0	48.3	84	16	0	13.1	51.7	80	-	-	2
70-852		66.5	49.2	85	14	1	12.3	52.8	83	-	-	3
70-871		65.0	54.9	88	12	0	12.6	53.2	80	-	-	2
70-920		65.0	55.2	88	12	0	12.6	53.2	87	36.7	9.0	4
70-968		65.0	50.2	86	14	0	12.5	52.2	83	-	-	3
70-1048		65.0	49.5	83	17	0	12.2	52.8	80	-	-	2
70-1177		60.5	48.0	82	18	0	15.3	50.5	80	-	-	2

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 21

QUALITY DATA ON PRELIMINARY YIELD DURUM WHEAT NURSERY SAMPLES

CALIFORNIA 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Tulelake (Rupert Experiment 26)												
Leeds	13768	65.0	45.7	84	15	1	13.3	53.4	88	35.3	9.0	4
Sentry	13102	64.5	47.6	76	22	2	13.6	51.3	87	35.7	9.0	4
70-2208		64.0	50.5	86	12	2	11.8	47.2	80	-	-	2
70-2212		63.5	51.5	89	9	2	13.1	49.4	70	-	-	1
70-2218		63.5	52.5	86	12	2	11.8	54.1	70	-	-	1
70-2222		64.0	63.6	92	6	2	13.2	50.0	70	-	-	1
70-2226		63.5	48.7	88	11	1	12.1	49.4	65	-	-	1
70-2227		64.5	56.4	94	5	1	12.4	51.5	70	-	-	1
70-2231		64.0	51.2	88	10	2	12.6	51.2	70	-	-	1
70-2232		64.0	57.4	92	6	2	13.6	49.3	70	-	-	1
70-2245		63.0	65.8	94	4	2	13.3	50.0	70	-	-	1
70-2246		64.0	63.4	94	5	1	13.1	51.6	80	-	-	2
70-2253		64.5	54.9	92	7	1	13.3	50.1	70	-	-	1
70-2259		64.0	50.0	80	18	2	11.7	50.4	70	-	-	1
70-2267		64.0	49.0	82	16	2	12.8	50.9	80	-	-	2
70-2271		65.0	56.8	88	10	2	12.4	52.5	83	-	-	3
70-2278		63.5	53.3	88	11	1	13.2	48.6	70	-	-	1
70-2282		64.5	56.0	92	7	1	12.6	51.1	70	-	-	1
70-2283		64.5	47.4	81	18	1	11.5	52.7	70	-	-	1
70-2285		64.5	49.1	84	15	1	12.2	51.6	70	-	-	1
70-2835		64.0	53.4	92	6	2	12.2	50.2	80	-	-	2
70-2839		64.0	53.3	90	9	1	12.5	51.1	80	-	-	2
70-2857		63.5	41.0	68	30	2	13.0	51.8	80	-	-	2
70-2858		63.0	43.1	68	31	1	13.0	51.6	70	-	-	1
70-2923		64.0	42.7	72	27	1	13.7	52.1	92	35.0	9.5	4

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W- White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise

TABLE 22

QUALITY DATA ON PRELIMINARY YIELD DURUM WHEAT NURSERY SAMPLES

WASHINGTON 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Pullman												
Lakota	13335	62.0	39.2	48	49	3	13.5	52.5	83	-	-	3
Leeds	13768	63.5	42.6	65	34	1	14.2	54.2	95	35.0	9.0	4
1243		62.5	40.3	31	67	2	13.1	55.1	75	-	-	1
1244		62.0	40.0	23	75	2	12.2	54.9	70	-	-	1
1245		62.0	39.2	36	62	2	13.3	55.4	73	-	-	1
1246		61.5	40.5	36	63	1	13.9	55.9	75	-	-	1
1248		62.5	40.7	43	55	2	15.1	55.2	87	-	-	3
1249		62.0	36.9	36	61	3	13.9	55.9	91	-	-	4
1250		62.0	35.0	29	67	4	14.1	55.4	85	-	-	3
1251		61.0	37.9	27	72	1	15.5	54.8	78	-	-	1
1252		63.0	40.0	32	67	1	13.0	56.1	78	-	-	1
1253		62.0	40.7	41	56	3	13.1	55.3	60	-	-	1
1254		61.0	39.2	40	57	3	13.6	54.1	65	-	-	1
1255		60.5	38.2	27	70	3	13.4	55.1	60	-	-	1
1258		60.5	35.7	20	75	5	12.5	54.7	65	-	-	1
1259		63.0	37.6	23	72	5	11.7	55.6	65	-	-	1
1260		61.0	34.2	13	82	5	12.3	55.9	65	-	-	1
1261		62.0	35.7	21	75	4	12.1	55.3	65	-	-	1
1262		62.5	39.5	41	56	3	13.0	53.9	60	-	-	1
1263		62.5	41.7	56	42	2	13.3	55.4	89	-	-	3
1264		62.0	45.8	73	26	1	13.6	54.4	86	-	-	3
1265		61.5	41.0	52	47	1	14.7	53.5	65	-	-	1
1266		61.5	42.7	55	44	1	14.4	54.3	65	-	-	1
1267		63.0	37.6	37	61	2	13.9	55.4	89	-	-	3
1268		62.0	39.7	39	58	3	14.2	56.6	90	-	-	3

(CONT'D.)

TABLE 22 (CONT'D.)

QUALITY DATA ON PRELIMINARY YIELD DURUM WHEAT NURSERY SAMPLES

WASHINGTON 1970 CROP

Variety or State Sel. No.	C.I. No.	T.W. 1/	1000 Kwt.	Kernel Size Lg.	Kernel Size Med.	Kernel Size Sm.	Wht. Pro. 2/	Pur. Semo. 3/	Dust Color Score 4/	Semo. Abs. 2/	Vis. Color	Gen. Eval. 5/
		#/Bu.	g.	%	%	%	%	%		%		
Pullman (Cont'd.)												
1269		62.0	46.5	75	24	1	14.7	53.3	88	-	-	3
1270		63.0	36.0	22	73	5	13.5	53.2	83	-	-	2
1271		63.0	36.5	36	61	3	14.6	54.1	90	-	-	3
1272		62.0	37.0	38	59	3	13.2	54.1	85	-	-	3
1273		62.0	36.4	42	55	3	12.6	54.4	80	-	-	2
1274		64.0	38.0	51	47	2	12.6	55.8	83	-	-	2
1275		63.0	40.5	62	36	2	13.0	55.2	85	-	-	3
1276		63.0	39.2	54	43	3	12.7	52.5	87	-	-	3
1285		64.0	43.1	61	38	1	13.2	54.8	80	-	-	2
1288		65.0	43.5	58	41	1	13.7	54.5	79	-	-	1
1289		63.5	42.0	53	47	0	13.9	53.6	80	-	-	2
1292		64.0	40.3	46	53	1	13.5	55.7	90	37.7	9.0	4
1298		64.0	43.9	68	31	1	13.7	53.4	93	35.3	9.5	4
1310		63.5	40.7	57	42	1	14.9	53.9	93	36.7	8.5	4
1323		62.5	38.2	17	81	2	13.5	53.2	90	35.7	8.5	3

1/ Unofficial
2/ 14% Moisture Basis
3/ Purified
4/ Below 80 color score not acceptable. W - White, R - Red
5/ 1 - No Promise, 2 - Little Promise, 3 - Some Promise, 4 - Good Promise